metric standards, but this could happen slowly. Now that so much is said of scientific management, have the owners of large plants ever taken the trouble to estimate the time spent by their computers on account of our adherence to an archaic system? While abroad, I bought me a carpenter's rule in the metric system, and use this in my shop except when I have to use machinery built on the British system. I make fewer mistakes, and have far less difficulty in reading a metric rule than one graduated to sixteenths of an inch.

The metric system has the advantage in classes in physics that we can spend most of our time on physics, and comparatively little on arithmetic, and perhaps our pupils may help to demand the metric system as the universal standard.

PAUL F. GAEHR

PSYLLIDÆ WINTERING ON CONIFERS ABOUT WASHINGTON, D. C.

THE fact that certain Psyllidæ spend the winter upon conifers is well known,[1] but little has been put on record concerning this habit in the United States. In the vicinity of Washington five species of Psyllids abundantly winter on *Pinus virginiana*. I have more than once taken all five on the same day. On a bright day they are very active, hopping quite as vigorously as in summer. The list includes *Livia maculipennis* Fitch, *L. vernalis* Fitch, *Aphalara calthæ* Linn., *Trioza salicis* Mally, and *T. tripunctata* Fitch. The true food plant or host on which these species breed in no case is pine, the conifer being used only as an alternate food plant and winter shelter. The habit of resorting to conifers is not restricted to the cold season, however, as the records show. *Livia vernalis* has been taken on pine in June, July and September, also, *Aphalara calthæ* in April, and *Trioza tripunctata* in April, May and June.

These Psyllids occur on *Pinus tæda* also, and to some extent on *Juniperus virginiana*. Another species of Psyllid—*Pachypsylla cmamma* Riley—occurs from October to February at least upon juniper and hemlock.

Wintering specimens of two of these species of Psyllidæ differ in appearance from the summer forms. In *Aphalara calthæ* the colors are more pronounced in winter specimens, and in *Trioza salicis* many individuals taken at this season are notably more pruinose than the summer form.

Besides psyllids, a variety of other insects resort to pines in winter. They include leafhoppers of the genera *Empoasca, Erythroneura, Balclutha,* and *Idiocerus,* the cercopid, *Clastoptera,* and the Heteroptera, *Lygus pratensis* Linn., and *Piesma cinerea* Say. *Aradus cinnamomeus* Panz. occurs on these trees throughout the year. The assemblage of winter guests on pine includes also small sawflies, and other hymenoptera, numerous diptera, especially Chironomidæ, and a few beetles and spiders. By beating conifers, scaling off bark, searching through fallen leaves, and sifting, I have made as numerous and varied a catch on many a winter's day, as I have on some days during the more favored season. I may mention that I sought in vain for Psyllids on pines in Maine in early March, getting only diptera and spiders.

W. L. MCATEE

[1] See especially Reuter, O. M., "Hemipteren-Fauna der Palaearktischen coniferen," 1908.

SCIENTIFIC BOOKS

Medicine in China. By the China Medical Commission of the Rockefeller Foundation. New York, 1914.

This volume, containing 113 pages including the appendices, is a summary of the investigations of Chinese medicine by a commission appointed by the Rockefeller Foundation early in 1914. The commission consisted of President Judson, of the University of Chicago; Roger S. Greene, consul-general of the United States at Hankow; Dr. F. W. Peabody, of the Harvard Medical School, and George Baldwin McKibbin. The purpose of the commission was to study the medical schools, hospitals and dispensaries of China with reference to the needs of the country and the desirability of aiding these institutions financially or otherwise. The commission has produced a report which is not only informing, but is full of interest and written in non-technical language.

The statement of the committee that China

probably has the largest death rate of any country in the world is probably correct. The responsibility for this lies fundamentally in the lack of knowledge of both personal and public hygiene on the part of the Chinese people, and in the lack of properly trained physicians, nurses and sanitarians to disseminate such knowledge. The tremendous mortality from which the Chinese suffer is, in the main, due to diseases of parasitic origin. Tuberculosis is widespread, and hookworm and syphilis compete with it as the important causes of death. In addition to these persistent causes, recurrent waves of epidemic disease carry death and destruction to various parts of the great Chinese Empire. Cholera, typhus fever and the plague may be mentioned in this connection. An attack of smallpox is taken for granted by the natives, just as it was in the western world before the introduction of vaccination. The report contains no information as to the prevalence of the degenerative diseases which are increasing so ominously in the United States, but it is safe to assume that they also are present and doing their share of destruction. The most hopeful feature of the health conditions in China lies in the fact that the prevalent causes of death are diseases of infectious origin, many of whose causes are already known and many of which have been almost stamped out, or at any rate considerably restricted, by modern methods of sanitation. The fact also that there are signs that the more intelligent among the Chinese themselves show evidences of an awakening interest in public health matters is of great significance.

The present condition of native Chinese medicine and surgery produces effects more serious and more widespread than the report of the commission would indicate. Doubtless this aspect of the subject has been purposely somewhat lightly touched upon; for the report, to produce its best results in China, must of necessity avoid engendering antagonism. The conditions of knowledge and practise in China to-day are not unlike those which obtained in ancient Greece and Rome. No regulation of practise, in our sense of the word, exists. Any ignorant fakir can practise, and practise is purely empirical. The Chinese prejudices against the dissection of the human body have prevented the development of medicine upon a sound basis of anatomy and pathology, and have resulted in an ignorance concerning these subjects that would be laughable were its remote effects on the public not so terrible. It would be difficult to estimate, according to those who have lived in China, the amount of suffering which results from the lack of knowledge of the Chinese practitioner; and this is not confined to remote country districts, many large cities containing not a single medical practitioner trained in western methods. The few Chinese who have been so trained are mainly connected with the missionary hospitals and are, most of them, graduates of second-grade Japanese schools with low entrance requirements.

The medical schools of China have in the main developed in connection with the hospitals as the result of the urgent need for assistants in hospital work. In a sense, therefore, the development of the Chinese medical school has followed along the developmental lines of the British medical school, rather than the German or the American one. The schools which exist at the present time are, most of them, conducted in association with missionary hospitals and each is usually supported by the cooperation of several missionary societies. In addition to these schools, there are a few government schools, mostly under Japanese influence, and a few independent schools affiliated with American universities such as those associated with Harvard, the University of Pennsylvania and Yale. It is clear from the report of the commission that, as in this country, the medical schools have grown up haphazard at various points, doubtless as the result of very real needs, but, nevertheless, without careful study of the country as a whole in its geographical and educational relation to medical training. Practically none of the existing medical schools is adequately equipped according to western standards. Most of the schools lack the financial resources so necessary to maintain a high-grade medical school.

Practically none of them possess an adequate corps of properly trained instructors able to devote their entire time to the work. The influence of political, sectarian and in some instances personal domination, have been detrimental to the best development of some of the schools. The availability of properly qualified students has not always been considered in the development of Chinese medical schools, nor has cooperation with the Chinese themselves always been developed as it might. There are too many weak schools, and in certain places duplication of effort is to be observed.

The hospitals in China are administered for the most part by the missionary societies. There are a few Chinese Red Cross and government hospitals maintained by foreign organizations other than the religious ones. Many of the hospitals are well constructed along modern lines, but a large number are housed in remodelled dwellings which are more or less unsatisfactory for hospital purposes. The possibility of constructing satisfactory hospitals is not lacking, for building material is available and cheap almost everywhere in China, and labor is likewise cheap. From the standpoint of the construction of modern plants there are, however, some serious drawbacks which scarcely come into account with us. The lack of public sewage systems, the absence of public water supplies even in the large cities, and the lack of gas and electricity in most parts of China make difficult, but by no means impossible, satisfactory hospital conditions. The main difficulties at present have to do with the human rather than the mechanical factors. Practically no Chinese hospital in existence is sufficiently supplied with properly trained physicians. Even more important is the lack of properly trained nurses. The prejudices of the Chinese themselves interfere with smooth and satisfactory administration. The dislike of bathing (a peculiarity not confined to the Chinese), the filthy habits, the vermin-infested clothing of the patients, and the fact that in many hospitals a patient is allowed to bring members of his family permanently into the hospital with him, do not add to the ease of administration. In the dispensaries too, most of which act as feeders to the hospital, the same lack of physicians and nurses is apparent. It is, I think, a fair criticism that in many instances the western physicians in charge of Chinese hospitals have deferred too much to the customs of the Chinese people under the mistaken assumption that this was necessary in order to gain their patronage. There is ample evidence in the report that the opposite point of view, namely, that admission to the hospital is a privilege which the Chinese must pay for by a compliance with the western rules of hygiene, works out well in the end. Indeed, it is obvious that the function of a hospital, not only in China, but anywhere in the world, is not only to administer to the individual patients, but also to spread through them a knowledge of the methods of personal and public hygiene. This certainly can not be done by catering to their unhygienic habits.

The cause underlying the lack of sufficient medical and nursing help in Chinese hospitals is worthy of consideration. It is, apparently, not entirely a financial question, though the salaries paid are, we think, too low. It is poor policy to pay a professional man so low a salary that he spends important energy in making both ends meet which he should be spending on his professional work. It is probable, however, that other reasons than mere salary play an important part in the difficulties attendant upon obtaining physicians and nurses for medical work in the Chinese Empire. So far as the physicians are concerned it must be pointed out that the changes in medical education of the past twenty years, with the natural growth of hospitals and public health work, have resulted in a diminution of the physicians graduating, with a great increase in the opportunities. It is likely, therefore, that the supply of missionary physicians for China will be limited to the comparatively small proportion of medical graduates whose religious fervor or adventurous spirit is appealed to by the great opportunities which undoubtedly exist in the east. The same will doubtless be true of the nursing profession.

The question of the standards of medical

education which are to be upheld in China can surely be settled if the experiences of this country are taken into account. It is clear from American experience with low-grade medical schools catering to students with inadequate preliminary training that inestimable damage may be done, both to the medical profession and to the public, by a policy which permits of such a condition, even though it is proposed with the best of motives. The only rational view, looking ahead into the future, is that those responsible for medical education in China must demand an adequate medical training based upon a sufficient preliminary education, including the fundamental sciences. There is little question that education in China is changing with great rapidity. It seems clear that the social status of the physician is growing in popular respect. It is probable that the number of well-trained young men who are anxious to study medicine is constantly on the increase. Further than this, some of the great obstacles to satisfactory education in medicine, notably the Chinese objection to dissection, are gradually being overcome, and there is evidence that the attitude of the Chinese authorities towards western medicine is rapidly becoming more and more favorable.

The question of the language to be used as a medium for the instruction of the Chinese in medicine is also a matter of dispute even among those who have spent years in China. The most potent argument in favor of a foreign language, such as English, seems to be the lack of literature in the Chinese language. The day has gone by when medicine can be studied by means of text-books alone. Further than this, the medical man must be a student all his life and a student of current literature. There are doubtless many weighty reasons against the use of the English language in Chinese medical education. Few of them, we believe, can have the importance of this one in favor of it.

The recommendations of the commission seem to be founded on a fair estimate of the needs of the situation based on an impartial review of the facts obtained. They suggest the financial support of certain medical schools which are well situated and are capable of requiring and enforcing high standards of medical education. They provide for the establishment of model tuberculosis hospitals and aid in developing the general hospitals which serve the medical schools. They suggest the creation of scholarships for Chinese medical students and nurses, and fellowships for Chinese graduates and western medical workers in China who may wish to refresh their knowledge. They encourage the development of one or two well-equipped medical libraries and the advancement of laboratory and research work. All of the activities are to be carried on under the general supervision of a resident commissioner and an advisory committee.

It would be unfair to conclude this review without mentioning one fact that the report clearly indicates, viz., that an enormous amount of unselfish work has been performed under the most adverse and discouraging conditions by the western medical men and nurses now in the Chinese Empire. It is clear that there are practically no medical institutions in China where ideal conditions are to be met with. The lack of funds, the lack of physicians and nurses, the lack of proper buildings and equipment, the traditions of the people, all of them combine to make medical life in China anything but a bed of roses. But after all, these very deficiencies can not fail to appeal to the imagination of medical men and of nurses who are imbued with the desire for service coupled with the spirit of the pioneer. For to the pioneer, more than to all others, comes the joy of the struggle with the crude and the unfinished, and the satisfaction of leaving in its place a finished product stamped with the individuality of the worker.

GEORGE BLUMER
YALE UNIVERSITY

Die Lichtelektrizität. Von WILHELM HALLWACHS. Akademische Verlagsgesellshaft Leipzig, Germany. Mit 19 Figuren in Text. Pp. xi + 1–343.

This is, in all respects, the most compendious and complete treatise on photo-electricity which has yet appeared. Being written by one who is credited by Hertz himself with the discovery